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ABSTRACT

This is the second program in the Science Safari series produced by the Fairfax Network of the Fairfax County Public Schools. The series and the accompanying print materials are designed to show students a broad spectrum of animal life, introduce students to a variety of people who work with animals, and help students become aware of the important role they play in the future of the animal kingdom. The activities in this program are designed to introduce students to the wide range of herd animals, and enable them to learn about what herd animals have in common with each other, the characteristics of herd behavior, and the fascinating and often complicated research that the National Zoo is conducting in order to preserve some of the world's most beautiful and threatened animals. A list of resources is included. (JRH)

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ED 388 527

Hey! Have you heard about herds?

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"Hey! Have You Heard About Herds"

is the second program in the
Science Safari series, a production of
the Fairfax Network of the
Fairfax County Public Schools

in cooperation with:

Smithsonian Institution
National Zoological Park
NOAHS Center
Conservation and Research Center
(Front Royal, VA)

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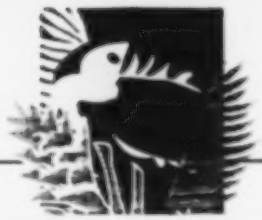


INTRODUCTION

Welcome to the second program in the **Science Safari** series. Now that we've had the opportunity to meet some amazing birds and the dedicated scientists who work with them in the first show, we turn our sights to the world of herd animals. Our program will take us to the National Zoological Park in Washington, D.C., to talk with experts about the largest of the herd animals--the elephant. Next, we'll visit the National Zoo's Conservation and Research Center (CRC) in Front Royal, Virginia. Much of the zoo's work at the CRC focuses on endangered species and on techniques that will allow these species to be bred successfully and reintroduced back into the animals' native habitat. Students will meet a few animals that are now extinct in the wild and meet the scientists who work with these animals every day.

By the close of "Hey! Have You Heard About Herds?" students will have been introduced to the wide range of herd animals, will have learned about what herd animals have in common with each other, the characteristics of herd behavior, and the fascinating and often complicated research that the National Zoo is conducting in order to preserve some of the world's most beautiful and threatened animals. We know you and your students will find this glimpse into the life of the herd animal informative, thought provoking, and, at times, humorous. Thanks for joining us during **Science Safari**; we hope you are enjoying our journey.

VOCABULARY

auditory signal	a sign made by an animal so that it can be heard by others
communication	the process of sharing information
coordination	the ability to control muscles and make them perform a task; elephants use coordination to lift water to their mouths with their trunks
endangered species	a species of plant or animal that is threatened with extinction
frequency	the number of times a sound wave moves up and down in a certain amount of time
habitat	the environment in which a species or group of species lives
herd	a group of large animals, usually hoofed, that band together for survival
infrasound	sound waves of a frequency that is below the level that human hearing can detect
matriarch	the female elephant that leads an elephant herd
pitch	the musical tone of a sound
predator	an animal that eats other animals
prey	an animal eaten by other animals
savannah	a flat treeless grassland found in tropical or subtropical climates

VOCABULARY

signal	a sign that causes others to act; for herd animals, a warning signal alerts them to the presence of danger
sound wave	a vibration that moves through the air, taking the form of an invisible wave
species	a group of living things so genetically similar that they are able to reproduce with each other
visual signal	a sign given by an animal to be seen by others
vocalization	the voicing of a sound; many herd animals vocalize to warn others of danger

PREVIEWING ACTIVITIES:

The following activities will help prepare students for "Hey! Have You Heard About Herds?"

1. Direct students to brainstorm and list animals that they think of as herd animals. Ask students to explain why they chose certain animals.

2. Write the names of some herd animals on the blackboard. Ask students to write a list of traits the animals have in common. (Some examples of herd animals are horses, pigs, camels, zebras, deer, antelopes, cattle, sheep, goats, bison, and oxen.)

3. Direct students to compare and contrast human beings with a particular herd animal, noting likenesses and differences in stages of development and behavior.

4 What are the differences between wild herd animals and domesticated herd animals? Students can do research to find out the differences and to learn about animal species that have members in all three categories. Students could also locate information about the history of animal domestication.

5. Several herd animals are now extinct or face possible extinction. Ask students to find out about these animals and about some of the efforts being made to prevent further extinction of herd species. Investigate the causes for extinction and the Endangered Species Act that was passed in 1973. Students may wish to find out about the purpose of this act and how it came into being. (Contact the U.S. Fish and Wildlife Service for more information.)

6. Humans have been using herd animals for a variety of purposes for many years. Direct students to do a research project in which they find out more about the ways mankind has used animals.

7. Ask students to research information on the habitat of a particular herd animal. How is the animal suited to this habitat?

Communication in a Herd

CAN WE TALK?

In order to survive in the wild, many animals band together in groups. Together they look for food, raise young, migrate, and keep watch for predators. People have given names to particular kinds of animals. For instance, we call a group of sheep or birds a flock. We say that a group of geese is a gaggle, and if we see a large number of bees in one place, we call them a swarm. **Can you think of any other names for groups of one kind of animal?**

You might have thought of a group of animals that we call a "herd," such as horses. The word "herd" usually refers to hoofed animals as well as elephants. **What other herd animals can you think of?**

Animals in herds need to be able to communicate with each other for the whole group to survive. People use spoken language to share information, like you do in your classroom with your teacher and classmates. This is called "verbal communication." People also use body movements and facial expressions, but they rely heavily on verbal communication.

Herd animals share information, too. They use body movements as a way of sharing information. They also use vocalizations, which are noises like snorts, peeps, barks, grunts, or growls. Herd animals also rely on their senses of smell, taste, and touch to learn about the area and animals around them.

With this in mind, try "telling" a friend a message without speaking. Try to let your friend know that you are hungry, or that you have to leave soon. If you want to, try telling your friend a complicated message. It could be something like, "I have to write a report about a famous person in history." (Remember not to use talking to "tell" your message!)

Can you think of some of the reasons herd animals need to communicate with each other? Some examples are to alert other animals to danger, to signal that they are ready to mate, or for a mother to find its young. At other times, animals in herds give visual and or vocal clues to signal danger or to announce who is dominant in the group. An elephant sensing danger will flair its ears (in order to appear larger), lower its head, and paw the ground. If this doesn't scare off the source of danger, a charge could be next!

Communication in a Herd

CAN WE TALK?

Did You Know?

Elephants make sounds, which are too low for humans to hear, that can travel as far as six miles. By making these vocalizations, single elephants or herds can share information over long distances.

Zebras have very good senses of smell and hearing, which they use to detect predators. Other herd animals, such as springbuck and wildebeests, when drinking at the same watering holes as zebras, will react to zebras' warnings that a predator is nearby.

DANGER! DANGER!

Did You Know?

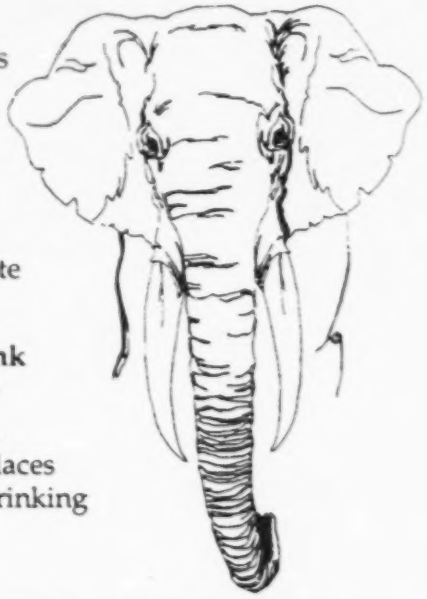
Herd animals use both vocalizations and visual signals to warn the group that danger is near. If one of the members of the herd sees a predator, that animal can warn the other animals in the area. Many hoofed animals, including gazelles, spring straight up into the air with all four legs hanging straight down. This is called *stotting*. Some species of gazelles and deer raise their tails straight up into the air, exposing the white hair underneath. Many animals *stomp* to alert the herd, pounding the ground several times with one leg.

All the animals in a herd must pay constant attention to each other and be ready to run when one of them gives a warning signal. How would you alert members of your herd to danger?

ACTIVITY:

1. Take the class to an outdoor area. Explain that one student will be the predator and the rest will be herd animals. During the game, they will look at the ground and pretend to be eating.
2. Give each of the students a piece of paper and tell them to hang it from a back pocket or belt loop. One of the pieces must say "you are the predator." Each student will choose a piece of paper. The child who picks the piece that says "predator" will keep it a secret.
3. Once everyone has a paper, tell them to mill around in a group, like a herd of animals grazing. The "predator" will try to grab a piece of paper from someone's pocket, before one of the herd animals sees him or her and sounds the alarm.
4. The alarm can be vocal (a yell), auditory (a clap or stomp), or visual (waving arms). When it is given, all the herd animals must run, with their pieces of paper, to the other end of the play area or to a finish line you have decided upon. This area represents a safe distance from the predator.
5. After playing the game a few times, discuss with the students the importance of the signal. Does the signaler reach the finish line first, or do the others? Was the signaler slowed down by stopping to make the signal? What kinds of signals work better? (In nature, vocal signals are more common that visual signals.)

AFRICAN "ELEPHACTS"



Here are some interesting facts about the world's largest herd animal.

For what do elephants use their trunks?

Elephants use their trunks for feeling, smelling, holding, drinking, bathing, eating, and making sounds to communicate with other elephants.

How much water does an elephant need to drink each day?

Normally elephants will drink once a day, taking in up to fifty gallons of water. In places where water is scarce, they can adapt to drinking every other or even every third day.

What do elephants eat?

Elephants will eat fresh grass first if it is available. If it is not, they will eat the leaves, branches, and even the bark off trees and other plants.

Why do elephants take mudbaths and cover themselves with dust?

Elephants often throw dust on themselves or roll in mud. They do this to protect their skin from the hot sun and to help keep away biting insects and parasites.

How many generations of elephants live in a herd?

An elephant herd is often made up of three generations of elephants.

How many baby elephants does a female give birth to in her lifetime?

A female elephant, called a cow, can give birth to as many as eight calves in her lifetime.

Did You Know?

African elephant herds are lead by a dominant female, called a *matriarch*.

Female elephants often work together to raise calves, and they teach younger females how to care for the calves.

When male elephants begin to mature, usually at about 15 years of age, they leave the herd to form groups of their own with other males.

When bull elephants reach about age 30, they are big enough and strong enough to compete for the opportunity to mate. They temporarily join with female herds to mate, and then they break off again.

You will usually know when an elephant herd is drinking at a nearby waterhole. They trumpet loudly, splash themselves and each other, and squirt water from their trunks.

You can often tell where a herd of elephants has grazed; the bark is stripped off the trees, the leaves within reach of their trunks have all been eaten, and some of the trees have even been knocked over.

Elephants act strangely when they discover the bones of another elephant. They feel them with their trunks, pick them up, carry them away, or even try to bury them.

Elephant herds make sure that calves stay close to the group; lions or hyenas may lurk close by.

Very young calves, who are still developing their coordination, can't hold water in their trunks long enough to bring it to their mouths to drink, as adult elephants do. The young calves have to drink directly into their mouths.

Young elephants love to play. A favorite game is climbing on top of each other. Sometimes older elephants will lie down on the ground and let the calves clamber on top of them.

HERD ANIMALS OF THE SAVANNAH:

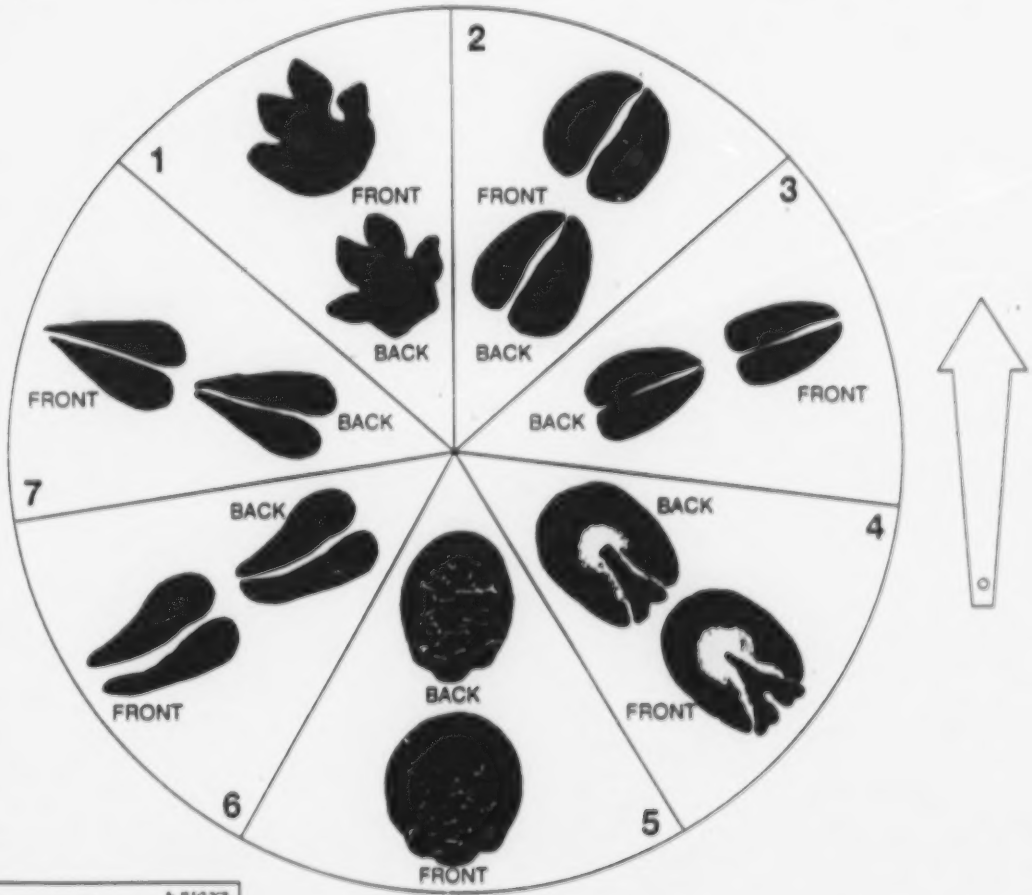
There are many different types of animals that travel in herds. On the wheel below are the front and back "feet" of several different herd animals. If you were traveling in Africa and came across these footprints, would you be able to tell which animal the prints belong to? Spin the wheel and wherever the arrow lands try to guess what animal left that particular track!

List of animals:

Buffalo
Giraffe
Elephant
Zebra
Wildebeest
Sable Antelope
Hippopotamus

Directions:

Make a spinner by cutting out the pie chart. For durability, glue the chart to a corresponding circle of poster board. Repeat this process with the arrow. Using a brass paper fastener, attach the arrow loosely to the center of the chart. The arrow should should be able to spin freely.



Answers:
Buffalo 2 Wildebeest 6
Giraffe 3 Sable Antelope 7
Elephant 5 Hippopotamus 1
Zebra 4

EXTRA! EXTRA! READ ALL ABOUT IT!

Scientists discover amazing information about elephant communication!

For centuries people have been fascinated by these large creatures. Now, with an incredible new discovery, the mystery of these mighty mammals has taken a new twist. Scientists in the late 1980s discovered that elephant communication is not limited to ear-splitting trumpeting or loud rumbling. Elephants communicate over long distance using infrasonic sound. These low-frequency sounds can travel over long distances and cannot be heard by the human ear! In spite of the many centuries that humans have been in contact with elephants, there is still more to learn about them.

SOUND GAME

Try to think of sound as a wave traveling through the air, similar to a wave traveling through water. Scientists call this a *soundwave*..

soundwave

When we hear a *high frequency* sound, we hear that sound as having a high pitch. If a sound has a high pitch, as a squeal or a squeak does, the soundwave will move up and down very quickly. If a sound has a low pitch, say a moan, the soundwave will move up and down very slowly.

low frequency soundwave

high frequency soundwave

If you were an elephant and wanted to communicate with other elephants far away, would you try to make sounds at high frequencies or at low frequencies? You would want to produce a sound that had a low frequency. It would have a long wavelength and it would travel a long distance.

SOUND GAME

ACTIVITY:

1. For this activity you will need a piece of string about 20 feet long and a partner. Hold one end of the string in one hand and ask your partner to hold the other end. Make sure you are holding the string at waist level. Do not stretch the string too tightly. Ask your partner to hold the string still while you move the string quickly up about one foot and down about one foot from where you originally started. You will see that the whole string moves up and down as the "wave" moves along the string. This is similar to a long wavelength.

2. Now, each person should hold the string about three feet in from where it was held in the first part of the activity. This time move the string up and down only a few inches. You will see the whole string move up and down. This is similar to a short wavelength.

3. Repeat the steps in part 1. This time move the string up and down a few inches like you did in part 2. You will notice that the smaller "waves" do not move all the way down the string. This shows why a high frequency travels only a short distance.

WHY PLAY?:

Why Play?

Scientists believe that when animals are young, playing can build strength and allow them to learn skills that they will need to survive as adults. Think about an activity that you practice. By doing something over and over again, like playing a piano or dribbling a basketball, you get better and better at it. The same idea applies to animals. When animals are playing, they may be practicing survival skills.

Did You Know?

Jumping and running are the most common acts of play performed by very young animals and humans.

ACTIVITY:

Listed in the activity below are some behaviors that scientists have observed in herd animals and the possible benefits those animals gain from the behaviors. Match the behavior with the skill the animals learn through practice.

Horses running through a field	Practicing fighting skills
Zebras play, chasing each other	Learning to walk on difficult terrain
Deer fawns butting heads	Increasing strength and endurance
Kittens playing with a ball of yarn	Practicing escaping from predators
Foals running through a field and kicking up their heels	Learning how to chase other animals or prey
Mountain goat kids running and jumping on rock piles	Learning hunting skills

Now think of the skills you learn from playing hide and seek, playing catch, playing a computer game, climbing on playground equipment, playing tick-tack-toe, and playing in a band.

Answers:

Horses running in a field — Learning how to chase other animals or prey

Zebras play, chasing each other — Increasing strength and endurance

Deer fawns butting heads — Practicing fighting skills

Kittens playing with a ball of yarn — Learning hunting skills

Foals running through a field and kicking up their heels — Practicing escaping from predators

Mountain goat kids running and jumping on rock piles — Learn to walk on difficult terrain

POSTVIEWING ACTIVITIES:

1. Direct students to do a think-pair-share activity about herd animals. Allow students one to two minutes to think about what they have learned during the show. Then ask students to work with a partner to verbally share their knowledge. Each member of the pair should be given a minute to tell the other partner what they know. (The second person in the pair may not duplicate information that the other partner has already given.) Then ask student pairs to share their information with the class.

2. Ask students to create short poems about favorite herd animals. Direct students to use the following format.

   Deer! *(animal name)*
   Frisky, alert! *(two adjectives)*
   Darts, munches, rests. *(three verbs)*
   So many on Skyline Drive. *(phrase)*
   Deer! *(animal name)*

3. Discuss the meaning of some common phrases that are related to herds: "herd mentality," "riding herd," "There's safety in numbers."

4. Direct students to create a board game about herd animals for their classmates to play. Use the game sheet on page 15.

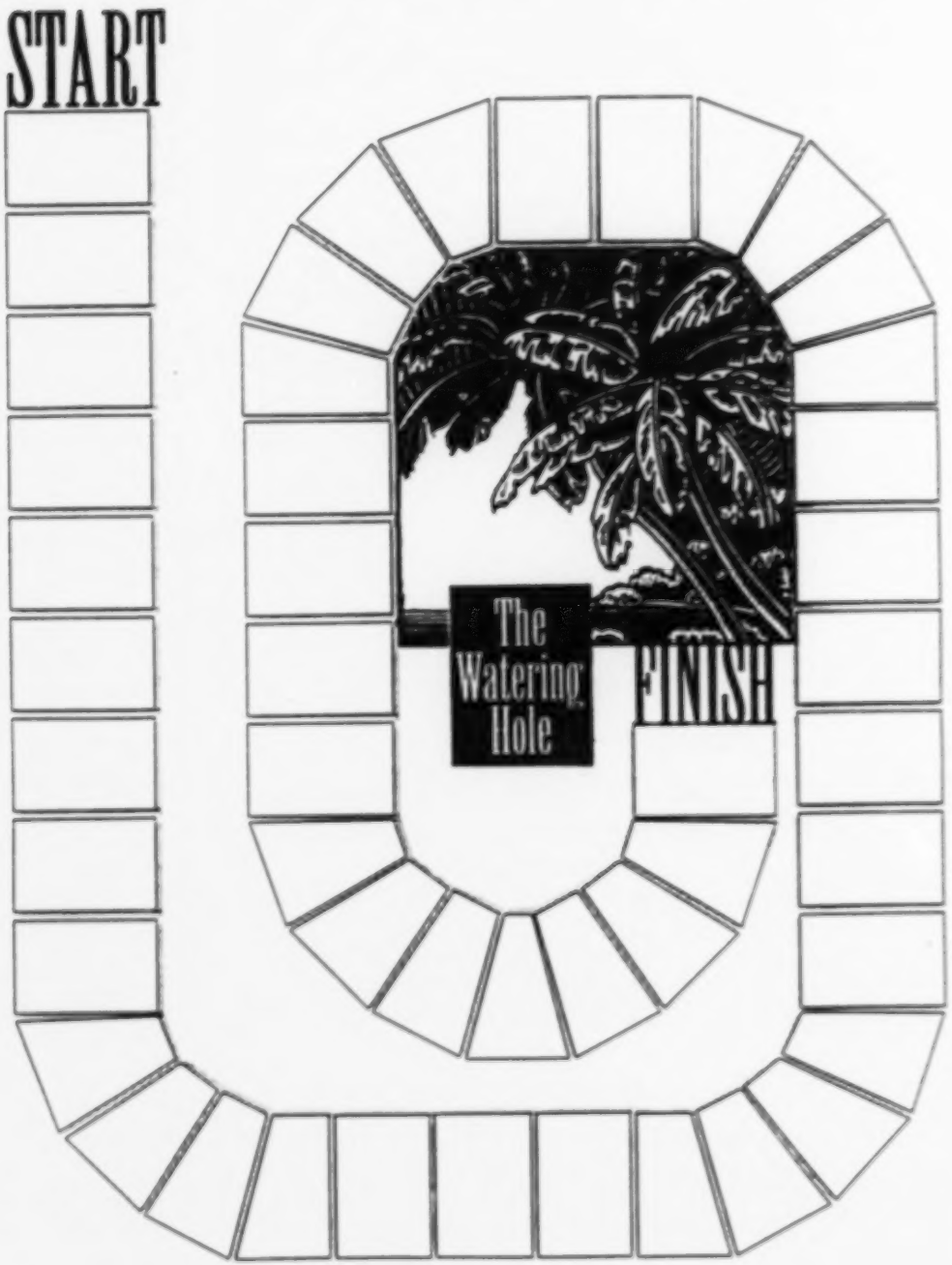
5. Ask students to research the life spans or gestation periods of some of the herd animals and to make graphs to compare the life spans.

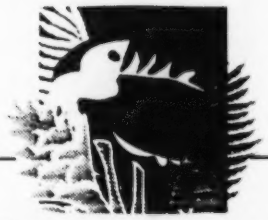
6. Create a herd animal calendar. Students could draw, paint, or sketch pictures of a variety of herd animals for the top of each month. In the date portion of the calendar students could share interesting herd animal facts they gather from research they do about the herd animals.

7. Give each student a sheet of paper. Direct students to tear the sheet into several pieces. Allow students ten minutes to sketch a picture of the same herd animal on each of the small pieces of paper. Then ask the students to put the pictures into sequence and create a story to go with the pictures. Students can orally share their story ideas with a partner. Allow students time to write their stories and to take them through the four-step writing process, "Plan, Draft, Edit and Revise, Publish."

8. Create a display of herd animal pictures, maps, reports, photographs, and poems for the school's front lobby or library so students can share what they've learned.

POSTVIEWING ACTIVITIES:





RESOURCES

The following organizations and companies have resource materials or products available that pertain to "Hey! Have You Heard About Herds?"

Carolina Biological Supply Company
2700 York Road
Burlington, NC 27215

U.S. Fish and Wildlife Service
Branch of Education
4401 N. Fairfax Drive
MS304 Webb
Arlington, VA 22203

World Wildlife Fund
Public Information
1250 24th Street, NW
Suite 400
Washington, DC 20037

National Wildlife Federation
1400 16th Street, NW
Washington, DC 20036-2266

RESOURCES

Written by:

Louisa Sheldon	NOAHS Center, National Zoo
Alexandra Sangmeister	NOAHS Center, National Zoo
Bill Buick	NOAHS Center, National Zoo
Donald Peterson	Fairfax Network

Review Committee:

Ruth Stolk	National Zoological Park
John Lehnhardt	National Zoological Park
Kaci Thompson	Conservation Research Center, National Zoo
David Jenkins	National Zoological Park
Joan Townsend	National Zoological Park

Sources:

The African Safari. P. Jay Fetner. New York: St. Martin's Press. 1987.

Elephant Memories. Cynthia Moss. New York: William and Morrow and Company, Inc. 1988.

Elephants. Reinhard Kunkel. New York: Harry N. Abrams, Inc., Publishers. 1982.

Land Mammals of Southern Africa, A Field Guide. Reay H. N.Smithers. Johannesburg: Macmillan, South Africa. 1986.

Serengeti. Mitsuaki Iwago. San Francisco: Chronicle Books. 1987.

The Visual Dictionary of Animals. Martin Page ed. London: Dorley Kindersly Limited. 1991.

Wild Herds. Time-Life Films, Inc. 1977.